

FOREST STAND DELINEATION REPORT

for

**Annapolis Neck Property
Anne Arundel County, Maryland**

Prepared for:

**QW Properties LLC
4750 Owings Mills Boulevard
Owings Mills, Maryland 21117**

Prepared by:

Michael J. Klebasko 7/30/10

Michael J. Klebasko, P.W.S. Date

 **Klebasko
Environmental, LLC**

P.O. Box 1067

Gambrills, Maryland 21054

Phone: (410) 672-5990

FAX: (410) 672-5993

1. INTRODUCTION

This report is prepared in accordance with the requirements outlined in the Maryland Department of Natural Resources' *State Forest Conservation Technical Manual*¹, as well as the Anne Arundel County guidelines. According to the *State Forest Conservation Manual*, the purpose of a Forest Stand Delineation (FSD) is to determine the most suitable and practical areas for forest conservation during the preliminary design and review stages of development. The preparer of this report, Michael J. Klebasko, is a qualified professional under COMAR 08.19.06.01 and the field study was conducted on May 20 and 24, 2010.

2. SITE LOCATION AND CONDITIONS

The 39.67-acre Annapolis Neck Property (study area) is located off Annapolis Neck Road, in Anne Arundel County, Maryland (Figure 1). The study area is bordered to the north by Annapolis Neck Road and Forest Drive, to the south by Quiet Waters Park, and on the remaining sides by existing residential properties. The site currently contains several single family residences, storage sheds, open fields, and mixed-hardwood forest, of which 24.19 acres qualify as forested for purposes of the Forest Stand Delineation.

3. SOILS

The U.S. Department of Agriculture - Natural Resources Conservation Service (NRCS) has produced soil surveys for every county within the State of Maryland. The soil surveys map the locations of the various soil types throughout each county and provide a description of each soil type. The updated soil survey for Anne Arundel County (Figure 2) that can be accessed on-line at <http://websoilsurvey.nrcs.usda.gov> revealed that six (6) soil types are mapped within the study area. One of the soil types has been classified as hydric by NRCS, and two others are classified as Prime Farmland. The soil descriptions are listed in Table 1, along with the erodibility factors for each. Soils are considered highly erodible if the K-factor exceeds 0.35.

4. STEEP SLOPES

Steep slopes are any areas with 25% or greater slope and/or areas with 15% or greater slope on highly erodible soils. Steep Slopes are demarcated on the attached FSD Plan.

5. RARE, THREATENED & ENDANGERED SPECIES

A formal request for an environmental review for rare, threatened, or endangered species on the property was submitted to the Maryland Department of Natural Resources on July 30, 2010, and a written response is currently pending. However, no threatened or endangered species were observed while performing the wetland delineation and forest stand delineation field work.

¹ Maryland Department of Natural Resources. 1997. *State Forest Conservation Technical Manual - 3rd Edition*. Baltimore, Maryland.

6. WETLANDS, STREAMS & 100-YEAR FLOODPLAIN

The limits of jurisdictional waters of the U.S. (including wetlands) were delineated by McCarthy & Associates, Inc. in 2004 and subsequently confirmed by the U.S. Army Corps of Engineers in a letter dated February 4, 2005. Several forested, nontidal wetland areas exist on the subject property, with the largest wetlands occurring near the center of the site. In addition, several smaller isolated wetland pockets exist along the southern property line. No intermittent or perennial streams or 100-year floodplain exist on the subject property.

7. METHODOLOGY

Forests are defined in the Forest Conservation Act (Nat. Res. Art. 5-1601) as a biological community dominated by trees and other woody plants covering a land area of 10,000 square feet or more, having a minimum density of at least 100 trees per acre with a minimum of 50% of those trees having diameters at least 2 inches at breast height. Forest also includes areas in which the trees have been cut but not cleared of their stumps.

Prior to conducting the field study, a base map was created by overlaying known environmental features (i.e. wetlands, streams, mapped soil types) and existing site conditions (i.e. tree-line, topography, structures) onto the map. The base map was then used to determine possible forest stand boundaries and to establish a sampling strategy for the site. The manual requires a minimum of one 1/10 acre sample plot per 4 acres of forest stand area; a minimum of two plots per forest stand; and a minimum of three plots for the total forested area of the site.

A Biltmore Stick was used to determine the size of trees generally less than 28-inches in diameter, while a 50-foot retractable D-tape was used to measure the larger trees. A Basal Area 10 Factor prism was used to collect information on tree densities at each sample point. For this study, ten (10) data point locations were used to collect the required field data. Their locations are indicated on the FSD Plan and each data point was marked in the forest with red ribbon and numbered.

Data collected at each sampling point and noted on the attached Forest Stand Delineation Field Sampling Data Sheets included such information as basal area, percent canopy closure, percent invasive species cover, shrub and herbaceous species, and percent downed woody debris. In addition, any specimen trees (trees with diameters-at-breast height greater than 30 inches) or trees with diameters within 75% of a State Champion were also flagged and their locations demarcated on the FSD Plan.

The information collected in the field was then used to calculate a structure value for each forest stand. The structure value places each forest stand in one of three categories: Poor, Good and Priority. This data aids in determining the overall value of each forest stand.

8. STAND DESCRIPTIONS

The forest stand delineation field study revealed that the existing forest on the site can be divided into three (3) stands based on age and/or species composition.

Stand 1

Stand 1 (18.68 acres) is a mixed-hardwood forest divided into two sub-stands. The canopy is generally dominated by white oak (*Quercus alba*), Virginia pine (*Pinus virginiana*), chestnut oak (*Quercus prinus*), and yellow poplar (*Liriodendron tulipifera*). This stand has an average DBH of 14 inches and contains one (1) specimen tree. The herbaceous and shrub layers are comprised of black gum (*Nyssa sylvatica*), sweet gum (*Liquidambar styraciflua*), American holly (*Ilex opaca*), oak seedlings (*Quercus sp.*), and blueberry (*Vaccinium sp.*). As noted on the plan in the southwest corner of the stand is an area with higher than average oak mortality, likely the result of an insect infestation within the last several years. The Forest Structure Analysis Sheet indicates that this stand has a structure value of 16, which puts it in the "Priority" rating. Because Stand 1 contains significant environmental features (i.e. nontidal wetlands, 25-foot wetland buffers), it should be classified as a Priority 1 Save Area.

Stand 2

Stand 2, which totals 4.40 acres, is a bottomland, mixed-hardwood forest dominated by red maple (*Acer rubrum*) and sweet gum. Comprised of two substands, Stand 2 has an estimated 88% canopy closure, 73% herbaceous cover, and 35% invasive species cover. This stand also has an average DBH of 12 inches (Appendix B), and relatively dense shrub and herbaceous layers comprised of red maple, sweet gum, highbush blueberry (*Vaccinium corymbosum*), cinnamon fern (*Osmunda cinnamomea*), poison ivy (*Toxicodendron radicans*), and greenbriar (*Smilax rotundifolia*). The Forest Structure Analysis Sheet indicates that this stand has a structure value of 14, which puts it in the "Good" rating. Because Stand 2 contains significant environmental features (i.e. nontidal wetlands), it should be classified as a Priority 1 Save Area.

Stand 3

Stand 3, which is comprised of three sub-stands totaling 1.90 acres, is an early successional forest dominated by pioneer and invasive species such as black locust (*Robinia pseudo-acacia*), black cherry (*Prunus serotina*), tree-of-heaven (*Ailanthus altissima*), and red mulberry (*Morus rubra*). This stand has an average DBH of 10 inches (Appendix C), and does not contain any specimen trees. The shrub and herbaceous layers are comprised of Japanese honeysuckle (*Lonicera japonica*), garlic mustard (*Alliaria petiolata*), chickweed (*Stellaria media*), tartarian honeysuckle (*Lonicera tartarica*), multiflora rose (*Rosa multiflora*), and poison ivy. The Forest Structure Analysis Sheet indicates that this stand has a structure value of 14, which puts it at the upper end of the "Good" rating. Because Stand 3 is comprised of early successional and invasive species and generally lacks significant environmental features, it should be classified as a Priority 3 Save Area. Stand 3 does not warrant preservation.

TABLE 1
Mapped Soil Types

Map Unit	Description	Hydric	K-Factor	Prime Farmland
AoB	Annapolis Loamy Sand, 2-5% slopes	No	0.20	Yes
AsC	Annapolis Fine Sandy Loam, 5-10% slopes	No	0.24	No
AuB	Annapolis-Urban Land Complex, 0-5% slopes	No	0.24	No
AuD	Annapolis-Urban Land Complex, 5-15% slopes	No	0.24	No
CkA	Colemantown Fine Sandy Loam, 0-2% slopes	Yes	0.43	No
DnB	Donlonton Fine Sandy Loam, 2-5% slopes	No*	0.43	Yes

* May potentially contain hydric inclusions.

Source: <http://websoilsurvey.nrcs.usda.gov> (June 2010)

TABLE 2
Key to Abbreviations For the Forest Species

Abbreviation	Common Name	Species Name
AA	Tree-of-heaven	<i>Ailanthus altissima</i>
AR	Red Maple	<i>Acer rubrum</i>
IO	American Holly	<i>Ilex opaca</i>
LS	Sweet Gum	<i>Liquidambar styraciflua</i>
LT	Yellow Poplar	<i>Liriodendron tulipifera</i>
MR	Red Mulberry	<i>Morus rubra</i>
MV	Sweetbay Magnolia	<i>Magnolia virginiana</i>
NS	Black Gum	<i>Nyssa sylvatica</i>
PS	Black Cherry	<i>Prunus serotina</i>
PV	Virginia Pine	<i>Pinus virginiana</i>
QA	White Oak	<i>Quercus alba</i>
QF	Southern Red Oak	<i>Quercus falcata</i>
QPh	Willow Oak	<i>Quercus phellos</i>
QPr	Chestnut Oak	<i>Quercus prinus</i>
QR	Northern Red Oak	<i>Quercus rubra</i>
RP	Black Locust	<i>Robinia pseudo-acacia</i>

TABLE 3

Specimen Tree List

<i>ID #</i>	<i>Common Name</i>	<i>Species Name</i>	<i>DBH (inches)</i>	<i>Condition</i>
1	Yellow Poplar	<i>Liriodendron tulipifera</i>	30	Poor*
2	White Oak	<i>Quercus alba</i>	36	Fair*
3	Red Maple	<i>Acer rubrum</i>	33	Good
4	Red Maple	<i>Acer rubrum</i>	31	Fair*
5	Sweet Gum	<i>Liquidambar styraciflua</i>	33	Poor*
6	Silver Maple	<i>Acer saccharinum</i>	32	Good
7	Yellow Poplar	<i>Liriodendron tulipifera</i>	34	Good
8	Silver Maple	<i>Acer saccharinum</i>	33	Good
9	Yellow Poplar	<i>Liriodendron tulipifera</i>	39	Good

* crown dieback

APPENDIX C

APPENDIX B

